

WHAT IS CLAIMED IS:

1. A detachable wireless radio frequency (RF) modem constructed to cooperatively operate with a host computing device having a memory, a central processing unit ("CPU") for executing a protocol stack software program stored in said memory, and a baseband processing unit, said RF modem comprising:
- an antenna;
- an RF head coupled to said antenna and configured during a receive mode to receive an electromagnetic RF signal through said antenna and to convert said RF signal into a modulated baseband analog signal for baseband processing in said host computing device, said RF head further configured during a transmit mode to receive a modulated baseband analog signal generated by said host computing device and to convert said modulated baseband analog signal into an electromagnetic RF signal to feed to said antenna; and
- an interface coupled to said RF head and configured to physically couple said RF modem to said host computing device, said interface further configured during said receive mode to feed said modulated baseband analog signal generated by said RF head to said host computing device, such that said baseband processing unit is enabled to convert said modulated baseband analog signal into a plurality of bits of data including protocol data and true data, and said CPU operating under the control of said protocol stack software program is enabled to separate said protocol data from said true data, said interface further configured during said transmit mode to feed said modulated baseband analog signal generated by said host computing device to said RF head.
2. The RF modem of Claim 1 wherein said RF head has at least one predetermined operating characteristic and wherein said RF modem further comprises an RF identification unit ("RFID") coupled between said RF head and said interface, said RFID operative to generate an identification signal that identifies said at least one operating characteristic of said RF head, said interface configured to feed said identification signal to said host computing device such that said host computing device

is enabled to detect said identification signal and decode said at least one operating characteristic.

5 3. The RF modem of Claim 2, wherein said identification signal is an analog tone.

 4. The RF modem of Claim 2, wherein said identification signal is a digital signal.

10 5. The RF modem of Claim 2, wherein one said operating characteristic of said RF head is an air standard used by said RF head.

 6. The RF modem of Claim 2, wherein one said operating characteristic of said RF head is a frequency under which said RF head can operate.

15 7. The RF modem of Claim 1, wherein said host computing device is a personal digital assistant.

 8. The RF modem of Claim 7, wherein said RF modem is dimensioned to fit within a cradle for a personal digital assistant.

20 9. The RF modem of Claim 1, wherein said host computing system is a laptop computer.

25 10. The RF modem of Claim 9, wherein said RF modem is dimensioned to correspond to a PCMCIA personal computer card.

 11. The RF modem of Claim 1, wherein said interface is located internal to said host computing device.

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12. The RF modem of Claim 1, wherein said interface is located external to said host computing device.

13. A system for providing wireless data communications comprising:

5 (a) a detachable wireless radio frequency (RF) modem comprising:

(1) an antenna;

(2) an RF head coupled to said antenna, said RF head

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10 configured during a receive mode to receive an electromagnetic RF signal through said antenna and to convert said electromagnetic signal into a modulated baseband analog signal, said RF head further configured during a transmit mode to receive an externally generated modulated baseband analog signal and to convert said modulated baseband analog signal into an electromagnetic signal to feed to said antenna; and

(3) an interface coupled to said RF head; and

15 (b) a host computing device physically coupled to said RF modem via said interface, said host computing device configured during said receive mode to receive said modulated baseband analog generated by said RF head through said interface, to convert said modulated baseband analog signal into a plurality of bits of data including protocol data and true data, and to separate said protocol data from said true data, said host computing device further configured during said transmit mode to generate said
20 modulated baseband analog signal for feeding to said RF head through said interface.

14. The system of Claim 13, wherein said RF head has at least one predetermined operating characteristic and wherein said RF modem further comprises an RF identification unit ("RFID") coupled between said RF head and said interface, said
25 RFID operative to generate an identification signal that identifies said at least one operating characteristic of said RF head, said interface configured to feed said identification signal to said host computing device such that said host computing device is enabled to detect said identification signal and decode said at least one operating characteristic.

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15. A detachable wireless radio frequency (RF) modem constructed to cooperatively operate with a host computing device having a memory and a central processing unit ("CPU") for executing a protocol stack software program stored in said memory, said RF modem comprising:

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an antenna;

sub 26 an RF head coupled to said antenna, said RF head configured during a receive mode to receive an electromagnetic RF signal through said antenna and to convert said electromagnetic signal into a modulated baseband analog signal, said RF head further configured during a transmit mode to receive said modulated baseband analog signal and to convert said modulated baseband analog signal into said electromagnetic signal to feed to said antenna;

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a baseband processing unit coupled to said RF head, said baseband processing unit configured during said receive mode to convert said modulated baseband analog signal into a plurality of bits of data including protocol data and true data, such that said CPU operating under the control of said protocol stack software program is enabled to separate said protocol data from said true data, said baseband processing unit further configured during said transmit mode to convert said plurality of bits of data including said protocol data and said true data into said modulated baseband analog signal; and

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an interface coupled to said baseband processing unit and configured to physically couple said RF modem to said host computing device.

16. The RF modem of Claim 15 wherein said RF head has at least one predetermined operating characteristic and wherein said RF modem further comprises an RF identification unit ("RFID") coupled between said RF head and said interface, said RFID operative to generate an identification signal that identifies said at least one operating characteristic of said RF head, said interface configured to feed said identification signal to said host computing device such that said host computing device is enabled to detect said identification signal and decode said at least one operating characteristic.

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17. A system for providing wireless data communications comprising:
- (a) a detachable wireless radio frequency (RF) modem comprising:
 - (1) an antenna;
 - (2) an RF head coupled to said antenna, said RF head
- 5 configured during a receive mode to receive an electromagnetic RF signal through said antenna and to convert said electromagnetic signal into a modulated baseband analog signal, said RF head further configured during a transmit mode to receive said modulated baseband analog signal and to convert said modulated baseband analog signal into said electromagnetic signal to feed to said antenna;
- (3) a baseband processing unit coupled to said RF head, said
- 10 baseband processing unit configured during said receive mode to convert said modulated baseband analog signal into a plurality of bits of data including protocol data and true data, said baseband processing unit further configured during said transmit mode to convert said plurality of bits of data including said protocol data and said true data into
- (4) an interface coupled to said baseband processing unit; and
- 15 said modulated baseband analog signal; and
- (b) a host computing device physically coupled to said RF modem via
- 20 said interface, said host computing device configured during said receive mode to separate said protocol data from said true data, said host computing device further configured during said transmit mode to combine said protocol data with said true data.

18. The system of Claim 17, wherein said RF head has at least one predetermined operating characteristic and wherein said RF modem further comprises an RF identification unit ("RFID") coupled between said RF head and said interface, said
- 25 RFID operative to generate an identification signal that identifies said at least one operating characteristic of said RF head, said interface configured to feed said identification signal to said host computing device such that said host computing device is enabled to detect said identification signal and decode said at least one operating characteristic.

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19. A detachable wireless radio frequency (RF) modem having at least one predetermined operating characteristic and constructed to cooperatively operate with a host computing device, said host computing device having a memory, a central processing unit ("CPU") for executing a protocol stack software program stored in said memory, and a baseband processing unit, said RF modem comprising:

an antenna;
an RF head configured during a receive mode to receive an electromagnetic RF signal through said antenna coupled to said RF head and to convert said electromagnetic signal into a modulated baseband analog signal for baseband processing in said host computing device, said RF head further configured during a transmit mode to receive a modulated baseband analog signal generated by said host computing device and to convert said modulated baseband analog signal into an electromagnetic signal to feed to said antenna;

an interface coupled to said RF head and configured to physically couple said RF modem to said host computing device, said interface further configured during said receive mode to feed said modulated baseband analog signal generated by said RF head to said host computing device, such that said baseband processing unit is enabled to convert said modulated baseband analog signal into a plurality of bits of data including protocol data and true data, and said CPU operating under the control of said protocol stack software program is enabled to separate said protocol data from said true data, said interface further configured during said transmit mode to feed said modulated baseband analog signal generated by said host computing device to said RF head; and

an RF identification unit ("RFID") coupled between said RF head and said interface, said RFID operative to generate an identification signal that identifies said at least one operating characteristic of said RF head, said interface configured to feed said identification signal to said host computing device such that said host computing device is enabled to detect said identification signal and decode said at least one operating characteristic.

20. A detachable wireless radio frequency (RF) modem having at least one predetermined operating characteristic and constructed to cooperatively operate with a

host computing device having a memory and a central processing unit ("CPU") for executing a protocol stack software program stored in said memory, said RF modem comprising:

an antenna;

5 an RF head coupled to said antenna, said RF head configured during a receive mode to receive an electromagnetic RF signal through said antenna and to convert said electromagnetic signal into a modulated baseband analog signal, said RF head further configured during a transmit mode to receive said modulated baseband analog signal and to convert said modulated baseband analog signal into said
10 electromagnetic signal to feed to said antenna;

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a baseband processing unit coupled to said RF head, said baseband processing unit configured during said receive mode to convert said modulated baseband analog signal into a plurality of bits of data including protocol data and true data, such that said CPU operating under the control of said protocol stack software program is
15 enabled to separate said protocol data from said true data, said baseband processing unit further configured during said transmit mode to convert said plurality of bits of data including said protocol data and said true data into said modulated baseband analog signal;

an interface coupled to said baseband processing unit and configured to
20 physically couple said RF modem to said host computing device; and

an RF identification unit ("RFID") coupled between said RF head and said interface, said RFID operative to generate an identification signal that identifies said at least one characteristic of said RF head, said interface configured to feed said identification signal to said host computing device such that said host computing device
25 is enabled to detect said identification signal and decode said at least one operating characteristic.

21. A method for wireless data communications in a system comprising a detachable wireless radio frequency ("RF") modem having an RF head and an interface,
30 said RF modem constructed to cooperatively work with and be physically coupled at said interface to a host computing device, said host computing device having a memory, a

central processing unit ("CPU") for executing a protocol stack software program stored in said memory and a baseband processing unit, said method comprising:

(a) receiving by said system an RF electromagnetic signal having information to be received, said receiving comprising:

- 5 (1) receiving in said RF head said electromagnetic signal;
- (2) converting by said RF head said electromagnetic signal into a modulated baseband analog signal;
- (3) feeding by said RF modem through said interface said modulated baseband analog signal into said host computing device;
- 10 (4) converting by said baseband processing unit said modulated baseband analog signal into a plurality of bits of data including protocol data and true data;
- (5) separating said protocol data from said true by said CPU operating under the control of said protocol stack software program; and

15 (b) transmitting by said system an electromagnetic RF signal having information to be sent, said transmitting comprising:

- (1) generating by said baseband processing unit a modulated baseband analog signal from said plurality of bits of data including said protocol data and said true data, said plurality of data bits representing said information to be sent;
- 20 (2) feeding by said host computer through said interface said modulated baseband analog signal into said RF modem;
- (3) converting by said RF head said modulated baseband analog signal into said electromagnetic signal having information being sent.

25 22. A method for wireless data communications in a system comprising a detachable wireless radio frequency ("RF") modem having an RF head, a baseband processing unit and an interface, said RF modem constructed to cooperatively work with and be physically coupled at said interface to a host computing device, said host computing device having a memory and a central processing unit ("CPU") for executing

30 a protocol stack software program stored in said memory, said method comprising:

(a) receiving by said system an electromagnetic RF signal having information to be received, said receiving comprising:

- (1) receiving in said RF head said electromagnetic signal;
- (2) converting by said RF head said electromagnetic signal into
5 a modulated baseband analog signal;
- (3) converting by said baseband processing unit said modulated baseband analog signal into a plurality of bits of data including protocol data and true data;

10 CPU operating under the control of said protocol stack software program; and

(b) transmitting by said system an electromagnetic RF signal having information to be sent, said transmitting comprising:

- (1) generating by said CPU said plurality of data bits including said protocol data and said true data, said plurality of data bits representing said
15 information to be sent;
- (2) generating by said baseband processing unit a modulated baseband analog signal from said plurality of bits of data bits including said protocol data and said true data;
- (3) converting by said RF head said modulated baseband
20 analog signal into said electromagnetic signal having information being sent.

23. A method for detecting an identification signal in a system comprising a wireless radio frequency ("RF") modem having an RF head with at least one predetermined operating characteristic and a radio frequency identification ("RFID") unit
25 for generating an identification signal that identifies said at least one operating characteristic of said RF head, said system further comprising a host computing device physically connected to said modem and having, a power supply, memory and a central processing unit ("CPU") for executing RFID software stored in said memory, said method comprising:

- (a) powering up said host computing device and initializing said host
30 computing device to detect said identification signal;

(b) setting said host computing device to periodically interrupt its operation to detect for a different identification signal;

(c) setting said modem enabled to FALSE;

(d) detecting for the presence of said identification signal, and if said
5 identification signal is detected:

(1) decoding said identification signal to determine said at least one characteristic of said RF head;

(2) programming said modem and said host computing device according to said characteristics of said RF head; and

10 (3) setting said modem enabled to TRUE; and

(e) performing normal operations by said CPU and setting said host computing device to periodically interrupt its operation to detect for a different identification signal.

15 24. A detachable wireless radio frequency (RF) modem constructed to cooperatively operate with a host computing device having a memory, a central processing unit ("CPU") for executing a protocol stack software program stored in said memory, and a baseband processing unit, said RF modem comprising:

an antenna;

20 an RF head coupled to said antenna and configured during a receive mode to receive an electromagnetic RF signal through said antenna, to convert said RF signal into a modulated baseband analog signal and to perform digital to analog conversion of said RF signal to enable said host computing device to perform a baseband processing function, said RF head further configured during a transmit mode to receive a digital
25 signal generated by said host computing device and to convert said digital signal into an electromagnetic RF signal to feed to said antenna; and

an interface coupled to said RF head and configured to physically couple said RF modem to said host computing device, said interface further configured during

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